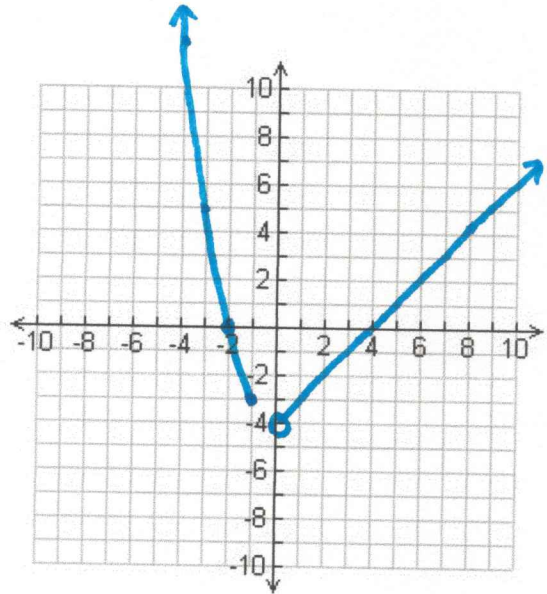


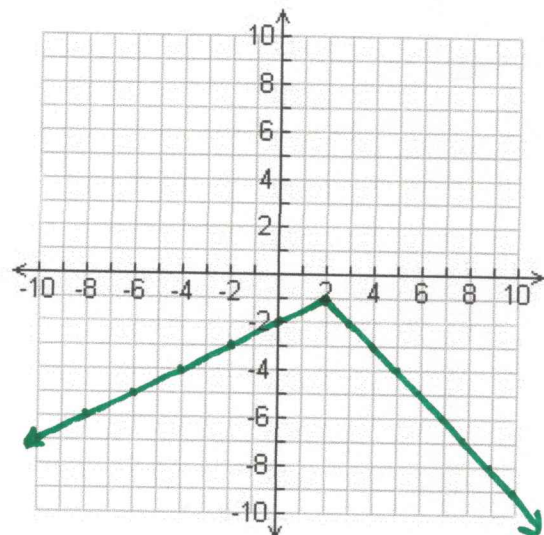
Name: Solutions

Graph each piecewise function:

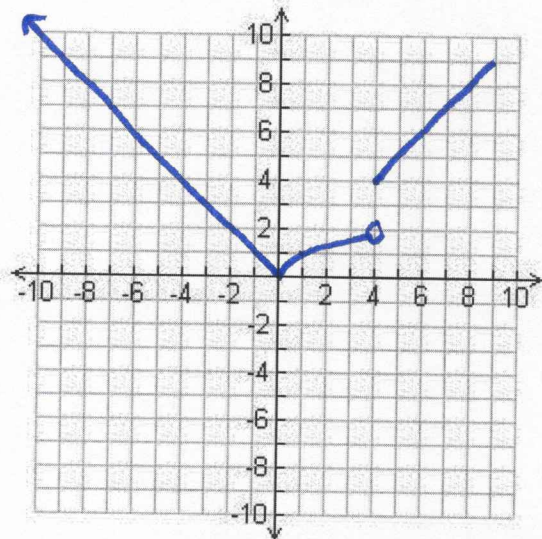
1. $f(x) = \begin{cases} x^2 - 4 & \text{if } (-\infty, -1] \\ x - 4 & \text{if } (0, \infty) \end{cases}$



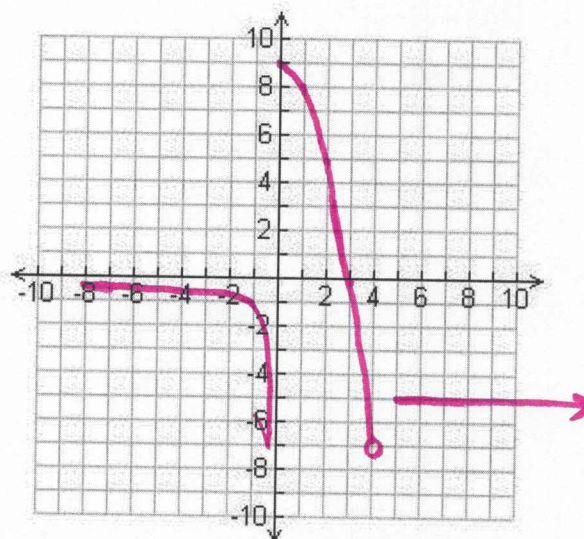
2. $f(x) = \begin{cases} \frac{1}{2}x - 2 & \text{if } x \leq 2 \\ -x + 1 & \text{if } x > 2 \end{cases}$



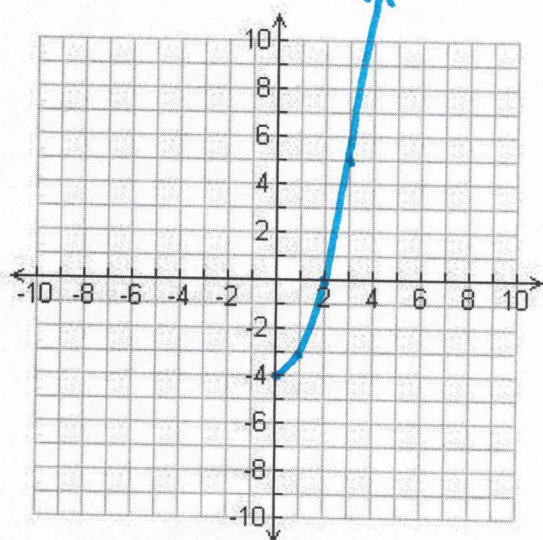
$$3. \quad f(x) = \begin{cases} -x & \text{if } (-\infty, 0) \\ \sqrt{x} & \text{if } [0, 4) \\ x & \text{if } [4, 9] \end{cases}$$



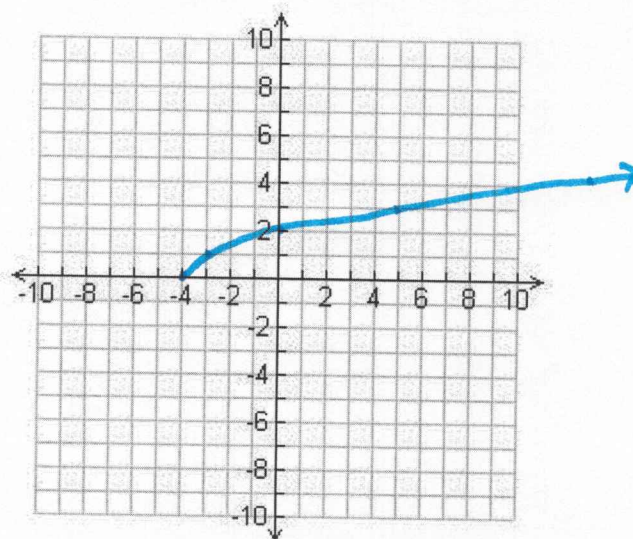
$$4. \quad f(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0 \\ -x^2 + 9 & \text{if } 0 \leq x < 4 \\ -5 & \text{if } x \geq 5 \end{cases}$$



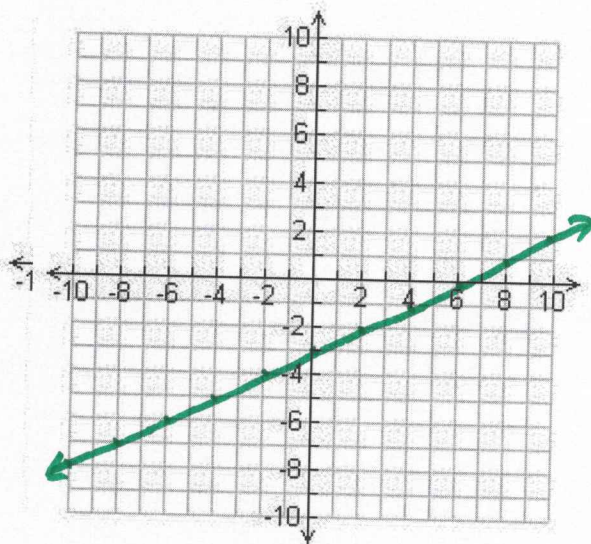
$$5. \quad \text{Graph } f(x) = x^2 - 4, [0, \infty)$$



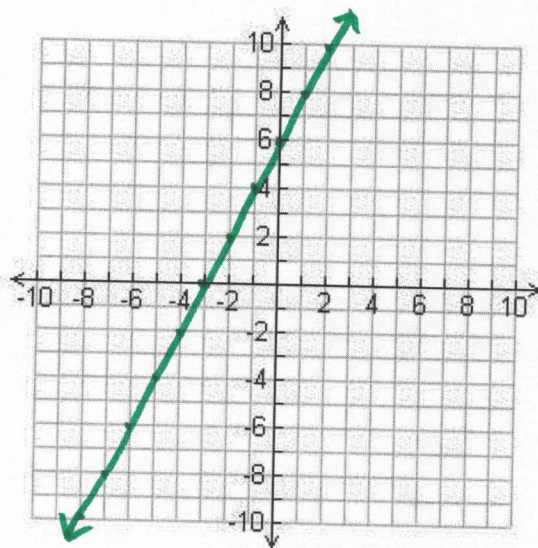
Graph the Inverse function



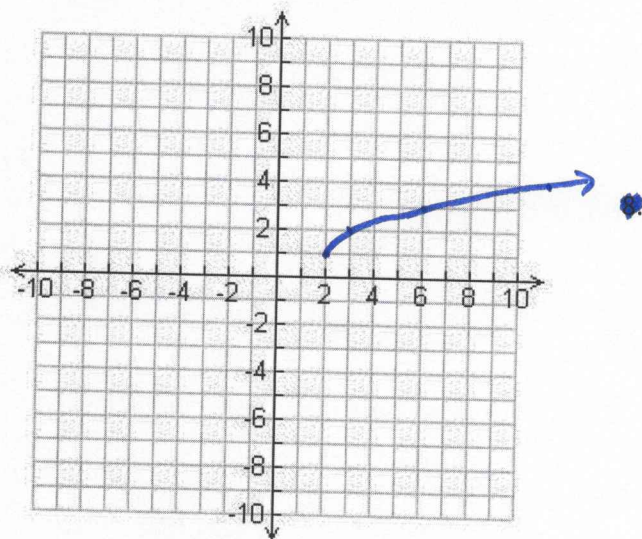
6. Graph $f(x) = \frac{1}{2}x - 3$



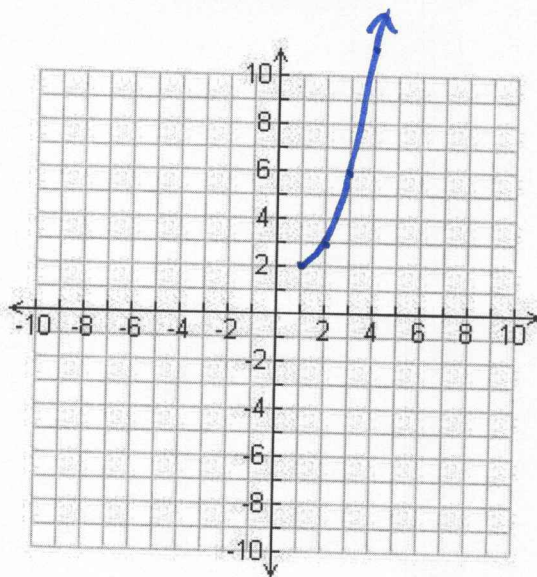
Graph the Inverse function



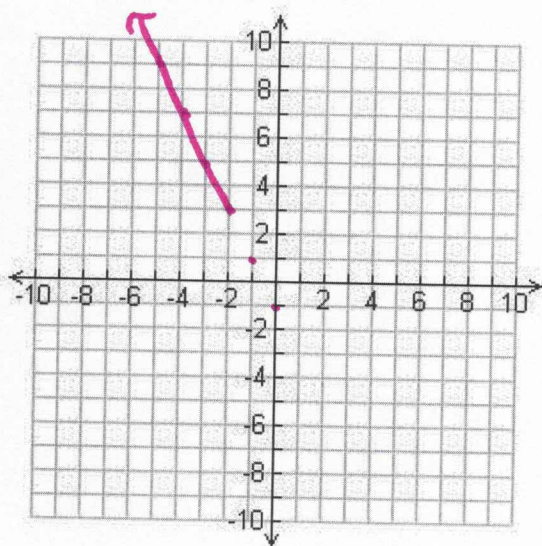
7. Graph $f(x) = \sqrt{x-2} + 1$



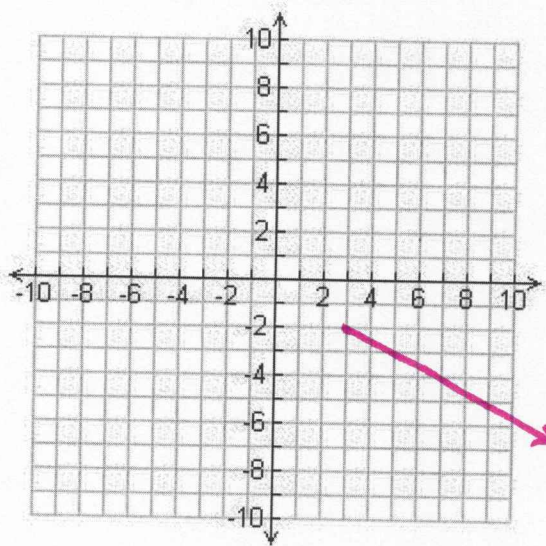
Graph the Inverse function



8. Graph $f(x) = -2x - 1$ for $x \leq -2$

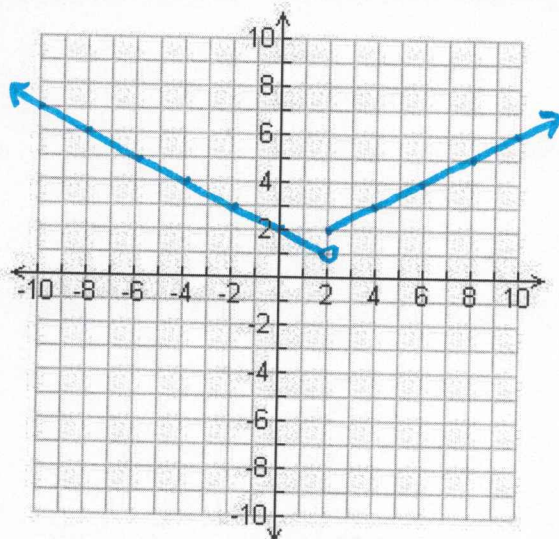


Graph the Inverse function

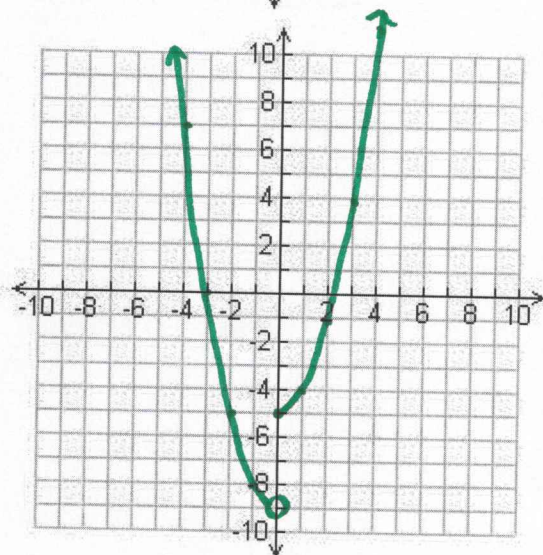


From the Graph shown, determine the formula or equation of the piecewise function

9.



10.



Use an Algebraic method to find an equation for the inverse function (pay special attention to the domain of the inverse function and be sure to include the domain of the inverse function)

11. $f(x) = 3x - 1$

$$y = 3x - 1$$

$$x = 3y - 1$$

$$x + 1 = 3y$$

$$\frac{x+1}{3} = y$$

$$y = \frac{1}{3}x + \frac{1}{3}$$

$$f^{-1}(x) = \frac{1}{3}x + \frac{1}{3}$$

12. $f(x) = \sqrt{x+5}$

$$y = \sqrt{x+5}, y \geq 0$$

$$x = \sqrt{y+5}, x \geq 0$$

$$x^2 = y+5, x \geq 0$$

$$x^2 - 5 = y, x \geq 0$$

$$y = x^2 - 5, x \geq 0$$

$$f^{-1}(x) = x^2 - 5$$

if $x \geq 0$
half parabola

13. $f(x) = \frac{1}{4}x + 3$

$$y = \frac{1}{4}x + 3$$

$$x = \frac{1}{4}y + 3$$

$$4x = y + 12$$

$$4x - 12 = y$$

$$y = 4x - 12$$

$$f^{-1}(x) = 4x - 12$$

14. $f(x) = x^2 - 9, x \geq 0$

$$y = x^2 - 9, x \geq 0$$

$$x = \sqrt{y+9}, y \geq 0$$

$$x + 9 = y^2, y \geq 0$$

$$y^2 = x + 9, y \geq 0$$

$$y = \sqrt{x+9}, y \geq 0$$

$$f^{-1}(x) = \sqrt{x+9}$$